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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte HIRONORI KAKIUCHI and HIROYASU INOUE

Appeal 2009-006943
Application 10/717,831
Technology Center 1700

Decided: February 16, 2010

Before EDWARD C. KIMLIN, TERRY J. OWENS, and
PETER F. KRATZ, *Administrative Patent Judges*.

OWENS, *Administrative Patent Judge*.

DECISION ON APPEAL
STATEMENT OF THE CASE

The Appellants appeal under 35 U.S.C. § 134(a) from the Examiner's rejection of claims 1-3, 7, 10, 13, 16, 19, 22, and 25, which are all of the pending claims. We have jurisdiction under 35 U.S.C. § 6(b).

The Invention

The Appellants claim an optical recording medium. Claim 1 is illustrative:

1. An optical recording medium comprising a substrate, a protective layer and a plurality of information recording layers between the substrate and the protective layer which are laminated via at least one intermediate transparent layer and capable of recording data in the plurality of information recording layers and reproducing data recorded in the plurality of information recording layers by projecting a laser beam via a light incidence plane constituted by one surface of the substrate or one surface of the protective layer onto the plurality of information recording layers, at least one information recording layer other than a farthest information recording layer from the light incidence plane among the plurality of information recording layers including at least one recording film, a first dielectric film located on a side of the light incidence plane with respect to the at least one recording film and containing an oxide as a primary component and added with nitrogen, and a second dielectric film located on an opposite side of the light incidence plane with respect to the at least one recording film and having a lower thermal conductivity than that of the first dielectric film, wherein the at least one information recording layer is constituted by a first recording film containing one element selected from a group consisting of Si, Ge, Sn, Mg, In, Zn, Bi and Al as a primary component and a second recording film provided in a vicinity of the first recording film and containing one element selected from a group consisting of Cu, Al, Zn, Ti and Ag and different from the element contained in the first recording film as a primary component and when the laser beam is projected, the element contained in the first recording film as the primary component and the element contained in the second recording film as the primary component are mixed with each other, thereby forming a record mark.

The References

Takaoka	4,682,321	Jul. 21, 1987
Uno	6,449,239	Sep. 10, 2002
Shuy	2001/0021160 A1	Sep. 13, 2001
Sakaue	2002/0168587 A1	Nov. 14, 2002

The Rejections

The claims stand rejected as follows: claims 1-3, 7, 10, 13, 16, 19, 22, and 25 provisionally on the ground of obviousness-type double patenting over claims 1-19 of copending Application No. 10/764805 (US 2004/0157158 A1) in view of Sakaue or Uno; claims 1-3, 7, 10, 13, 16, 19, 22, and 25 on the ground of obviousness-type double patenting over claims 1-19 of US 7,359,310 in view of Sakaue or Uno;¹ and claims 1-3, 7, 10, 13, 16, 19, 22, and 25 under 35 U.S.C. § 103 over Shuy in view of Sakaue and Takaoka.²

OPINION

We affirm the obviousness-type double patenting rejections and reverse the rejection under 35 U.S.C. § 103.

Obviousness-type double patenting rejections

The Appellants do not challenge the obviousness-type double patenting rejections (Br. 4). Accordingly, we summarily affirm those rejections.

Rejection under 35 U.S.C. § 103

Issue

¹ We treat the Examiner's provisional obviousness-type double patenting rejection over claims 1-26 of copending Application No. 10/792083 (US 2004/0174804 A1) in view of Sakaue or Uno as an obviousness-type double rejection over US Patent No. 7,359,310 (issued from Application No. 10/792083 on Apr. 15, 2008) in view of Sakaue or Uno.

² A provisional obviousness-type double patenting rejection of claims 1, 2, 7, 10, 13, 16, 17, 19, and 22 over claims 1-20 of copending Application No. 10/684981 (US 2004/0076907 A1) is moot due to the abandonment of that application (as of Sep. 28, 2009).

Have the Appellants shown reversible error in the Examiner's determination that the applied prior art would have rendered prima facie obvious, to one of ordinary skill in the art, an optical recording medium that comprises a substrate, a protective layer and a plurality of information recording layers between the substrate and the protective layer, and is capable of recording data in the plurality of information recording layers and reproducing data recorded in the plurality of information recording layers by projecting a laser beam via a light incidence plane constituted by one surface of the substrate or one surface of the protective layer onto the plurality of information recording layers?

Findings of Fact

Shuy discloses an optical recording medium comprising a substrate (10), a first thermal manipulating layer (20), a transparent layer (30), a reflecting layer (40), a second thermal manipulating layer (50), and a protecting layer (60) (§ 0026). The first (20) and second (50) thermal manipulating layers are ZnS.SiO_2 (§§ 0045, 0049). "The transparent layer 30 can be selected from the group of material(s) consisting of Si, Ge, GaP, InP, GaAs, InAs, GaSb, InSb, In-Sn oxide, tin oxide, indium oxide, zinc oxide, titanium oxide, Sb-Sn oxide, and/or combinations thereof" (§ 0026). "The reflecting layer 40 can be selected from the group of material(s) consisting of Ag, Al, Au, Pt, Cu, In, Sn, W, Ir, Re, Rh, Ta, alloys, and/or combinations thereof" (§ 0027). When the transparent layer (30) and the reflecting layer (40) are heated by a light beam they alloy and/or compound to form a mark (semi-transparent reflective area 35) (§ 0028; Figs. 2A, 2B).

Sakaue discloses an optical recording medium having, between an Ag reflective layer (17) and a recording layer (14), a Ta oxide, nitride or nitrooxide second dielectric layer (16) to improve the heat release ability of the optical recording medium and to eliminate corrosion of reflective layer (17) Ag which would be caused by S in a ZnS-SiO₂ second dielectric layer (16) (¶¶ 0037, 0064). Because “the oxides or nitrooxides of Ta have substantially the same optical constants as ZnS-SiO₂ and their thermal conductivity is better than that of ZnS-SiO₂ (i.e. they have better heat releasing ability), the result is achieved that the disk reflectivity is the same as when using ZnS-SiO₂ for the second dielectric layer, but the signal amplitude is improved” (¶ 0037). Preferably a first interface layer (15) is placed between the recording layer (14) and the second dielectric layer (16) to prevent diffusion of atoms between them, and a second interface layer (19) is placed between the second dielectric layer (16) and the reflective layer (17) to prevent diffusion of Ag from the reflective layer (17) (¶¶ 0042-43). Also, an interface layer can be placed between a ZnS-SiO₂ first dielectric layer (12) and the recording layer (14), and/or between the recording layer (14) and the second dielectric layer (16) (¶¶ 0059, 0067, 0077, 0088, 0102). The interface layers can include carbon or a nitride, oxide, carbide or nitrooxide of at least one metal from a list including Ti (¶¶ 0040, 0050, 0067, 0077, 0088, 0102).

Takaoka discloses an optical recording medium comprising a recording layer (12) including at least two thin films (13, 14), one of which has a relatively small optical extinction coefficient and is selected from Ge, Te, Bi, Ti and alloys thereof as major constituents, and the other of which has a relatively large extinction coefficient and can be, for example, Te, Bi,

Sb, Ag, In and alloys thereof as major constituents (col. 2, ll. 49-55). “When such a recording layer is locally irradiated with a laser beam, the thin films are heated and thereby undergo mutual diffusion, thus forming a [sic] one film of an alloy of these metals” (col. 2, ll. 57-60). Takaoka discloses a double-sided memory optical disk (20) comprising two recording layers (12) attached together by a bonding agent (21), which can be a hot-melt resin, and sandwiched between two transparent substrates (11) (col. 2, ll. 10-14; col. 4, l. 60 – col. 5, l. 4; Figs. 9, 10).

Analysis

The Appellants argue that “Takaoka only teaches double-sided optical disks having two light incidence planes defined by the transparent substrates 11 on either side of Figures 9 and 10” (Br. 7) and that “Takaoka does not disclose, teach, or suggest that the bonding agent 21 is transparent, nor does Takaoka teach any other intermediate transparent layers.” *See id.*

The Examiner argues that there is no indication that Takaoka’s bonding layer (21) is opaque, and that if it is transparent there is only reason to believe that both recording layers can be accessed from either side of the optical disk (Ans. 12).

Takaoka indicates that the double-sided memory optical disk (20) is used by projecting laser light through a transparent substrate (11) on each side thereof to a recording layer (12) on the same side of the bonding agent (21) as that substrate (11) (col. 2, ll. 10-14; col. 4, ll. 6-20; Fig. 4). Information on Takaoka’s recording layer (12) on each side of the bonding agent (21) is obtained by reading, through the transparent substrate (11) on the same side of the bonding agent (21), a difference in reflectivity between recording layer (12)’s non-irradiated portions and recording layer (12)’s

irradiated portions which have been converted to a single layer by mutual diffusion (col. 2, ll. 15-27, 34-48).

Even if, as argued by the Examiner, Takaoka's bonding layer (21) is transparent, the Examiner has not established that Takaoka's double-sided optical disk is capable of being used by projecting laser light through the recording layer (12) on a first side of the bonding agent (21) to the recording layer (12) on the second side of the bonding agent (21), thereby causing mutual diffusion of the second side recording layer (12)'s first (13) and second (14) thin films, and reading, through the first side recording layer (12) and substrate (11), the resulting difference in the reflectivity of the second side recording layer (12)'s irradiated and non-irradiated portions.

The Examiner relies upon that capability as being an inherent characteristic of Takaoka's double-sided memory optical disk. An inherent characteristic must be inevitable, and not merely a possibility or probability. *See In re Oelrich*, 666 F.2d 578, 581 (CCPA 1981). When an examiner relies upon a theory of inherency, "the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art." *Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Int. 1990). The Examiner's argument (Ans. 12) that there is only reason to expect that each of Takaoka's recording layers can be accessed from either side of the double-sided memory optical disk does not provide the required basis in fact and or technical reasoning which indicates that Takaoka's double-sided optical disk necessarily has that capability.

Conclusion of Law

The Appellants have shown reversible error in the Examiner's determination that the applied prior art would have rendered prima facie obvious, to one of ordinary skill in the art, an optical recording medium that comprises a substrate, a protective layer and a plurality of information recording layers between the substrate and the protective layer, and is capable of recording data in the plurality of information recording layers and reproducing data recorded in the plurality of information recording layers by projecting a laser beam via a light incidence plane constituted by one surface of the substrate or one surface of the protective layer onto the plurality of information recording layers.

DECISION/ORDER

The rejections of claims 1-3, 7, 10, 13, 16, 19, 22, and 25 provisionally on the ground of obviousness-type double patenting over claims 1-19 of copending Application No. 10/764805 (US 2004/0157158 A1) in view of Sakaue or Uno, and on the ground of obviousness-type double patenting over claims 1-19 of US 7,359,310 in view of Sakaue or Uno are affirmed. The rejection of claims 1-3, 7, 10, 13, 16, 19, 22, and 25 under 35 U.S.C. § 103 over Shuy in view of Sakaue and Takaoka is reversed.

It is ordered that the Examiner's decision is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a).

AFFIRMED

Appeal 2009-006943
Application 10/717,831

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